APPENDIX D RESPONSES TO COMMENTS ON THE DRAFT EA

Comment: I imagine this proposal will stir up a lot of controversy, as the Mesas seem to be quite protected by the residents of Golden. I believe the NREL mission is critical and will only benefit the city, the state, the nation and the planet. NREL is trying to lead by example and lower their own footprint, all while they continue to further research of renewable energies for the nation and the planet. This is much bigger, and in my opinion a worthy sacrifice, of a few hundred acres on top of one of our Mesas; especially if done in a respectful and courteous manner to the residents of Golden.

> **Response:** DOE appreciates the support for the mission and goals of NREL expressed by the comment. Both the beneficial aspects of the proposed actions and the visual impacts that might affect some members of the public have been identified in this EA. While the commenter also expressed that even as much as hundreds acres of development on the mesa top would be acceptable, DOE notes that the proposed development on the mesa top addressed in this EA would be limited to 5 acres, and based on the visual simulations, such development would not result in significant visual impacts.

Comment: I am a resident of Golden and have also spent some time walking around South Table Mountain. There are two significant prehistoric sites in the general vicinity of NREL that I don't think are on federal lands but I'm not exactly sure where the boundaries are for the various land owners. I'm also very interested in the CCC amphitheater and if there are any plans for that area.

> **Response:** Communications between DOE and the commenter have determined that the cultural resource sites are not located in or near the proposed project area and would not be impacted by the proposed actions.

Comment: It is questionable if this project supports the NREL mission such as “advancing and contributing to commercialization of renewable energy technologies.”

> **Response:** The RFHP advances and contributes to the commercialization of this renewable energy technology by demonstrating its technical viability, specifically in this geographic region and at altitude; demonstrating its financial viability, importantly through a private-sector financing mechanism, Energy Savings Performance Contracting (ESPC); and supporting a major NREL sustainability project that provides first-hand commercialization experience to NREL deployment and R&D personnel that can be transferred to DOE/NREL customers.

Comment: It appears the manufacturer will obtain operating data from NREL to improve its products, possibly advancing a renewable energy technology. If that is the case, is the manufacturer entering into a cost sharing arrangement with NREL, as is typically done with research partners having technology aligned with the NREL mission? Additionally, the RFHP has been proposed as a capital project for at least the last five years, and after going through the formal evaluation process it always fell off the list of funded projects.

> **Response:** There are no cost-sharing requirements in the DOE ESPC that would finance the proposed RFHP. The RFHP is not funded by NREL appropriations. Under an ESPC, the contractor is required to provide all capital equipment and is responsible for all maintenance, repair, replacement and operations, including long-term wood fuel supply. The contractor is paid from the energy cost savings realized from the project.

Comment: The EA states that the RFHP will have a 10- to 30-year operating lifetime. This appears rather broad and vague, with recognition that it may be the best data available for this technology. Of greater concern is that the EA does not state what the RFHP will cost, or what the pay-back period will be.

> **Response:** Various components of the RFHP have 10- to 30-year life ranges; the contract term with the Energy Savings Company (ESCO) is 24 years, and the contract covers replacement (by the ESCO) of any component with less than a 24-year expected life. While the Department certainly considers life cycle costs in its decision-making, the National Environmental Policy Act (NEPA) requires that a federal agency identify in an appropriate NEPA document the environmental impacts of its proposed actions before determining a course of action. "For the purposes of complying with the Act, the weighing of the merits and drawbacks of the various alternatives need not be displayed in a monetary cost-benefit analysis …" (40 CFR 1502.23).

Comment: The EA references documents that provide more detail on the exact location, but it does not indicate if or where these documents are available for review.

> **Response:** DOE standard practice is to maintain all reference documents in the project administrative record; references are available for review upon request.

Comment: The EA frequently states that the RFHP will be sited "at the edge of a natural drainage." Given the size of the RFHP and related paved areas, and the size of the natural drainage, it appears that the impact will be significant. Clarification of the exact impact on the natural drainage appears necessary.

> **Response:** DOE has added another figure to the EA clarifying the exact location of the RFHP and associated turnaround area (Figure 2-2). The potential impacts to the drainage area resulting from the RFHP and turnaround area are discussed in Section 3.1.7.2 of the EA.

Comment: Whether or not the natural drainage between the FTLB and the SERF qualified as a wetland or other type of protected area was always a point of concern for SERI and NREL. It was always my understanding that any wetlands were artificial, created by development of the STM site, and therefore not protected. Technically it is only a drainage ditch, and the only requirement is that it be capable of draining.

> **Response:** The designation of the arroyo as a drainage way is correct. This drainage has no areas of designated wetlands that would require special permitting for construction. As discussed in the STM Site-wide EA (DOE/EA #1440), the USACE determined in 1997 that the drainage is not considered a water of the United States. NREL's 2002 Vegetation Survey Report – South Table Mountain (June 29, 2002) identifies four small plant communities that supported wetland-type plants; these areas would not be affected by the Proposed Action. The vegetation study classifies the plant community within the drainages as ravine shrubland.

Comment: As part of its environmental best-management approach, as previously mentioned, NREL intentionally did not build on or across the drainage in the past. This accounts for the distance between the FTLB and SERF and the fact that separate utility spines are maintained on either side of the drainage.

> **Response:** NREL has had a culvert and service road over the drainage since the SERF was built. The existing culvert may be extended and two cottonwood trees would be destroyed, relocated, or replaced. The new utility spines would be located over the culvert. The building would not extend into the drainage.

Comment: The location of the RFHP is contrary to site development concepts previously espoused and represents a change in NREL's approach (if not actual policy) toward utilization of the site and voluntary protection of valued natural features. NREL site development planning looking out at least 25 years envisioned the area around the FTLB, SERF and S&TF as being a campus environment that would promote group interactions in indoor and outdoor settings. Placement of a boiler facility in the middle of this campus, along with access roads and heavy trucks delivering wood supplies, does not support such a collegial environment and have the appearance of a "wall," that is, a continuous string of buildings along the base of South Table Mountain.

> **Response:** The proposed location is a compromise between ideal environmental aspects of site development and the need for operational efficiency and effectiveness adjacent to the central utility plant. NREL site development planning continues to "envision the area around the FTLB, SERF, and S&TF as being a campus environment that would promote group interactions in indoor and outdoor settings." The RFHP is located at the northern edge of the buildable portion of the site, where there are no current or planned amenity areas (trails, outdoor seating, etc) for staff interaction. The staff interaction areas are significantly farther down the arroyo and should not be impacted by the location of the RFHP. As discussed in Section 3.1.4.2 of the EA, the RFHP would be blocked from view by the FTLB from most off-site observational viewpoints.

Comment: The EA states that plume modeling established that no adverse health effects will be presented to persons in other facilities by the RFHP stack emissions. This "minimum requirement" analysis addresses standards established by OSHA and ACGIH, but does not comment on possible re-entrainment of odors into the SERF and S&TF ventilation systems.

> **Response:** DOE and NREL have taken the issue of re-entrainment into consideration in preliminary design of the facility's stack height and will include design requirements in its contractual agreement with the ESCO.

Comment: The EA describes higher odor levels during start-up and shut-down of the RFHP, but there is no mention at all about specific odor levels during steady-state operation.

> **Response:** The RFHP will have dual combustion chambers – the primary combustion chamber is fired at up to 1,800°F, and secondary chamber is fired at 3,100°F – resulting in complete combustion. NREL has held discussions with four operators of similarly sized wood-fired boilers, including visiting one operation in person. In each case, the operators indicated that there were no odors during steady-state operation. Experience from other operators of similar systems has also shown that there are no noticeable odors.

Comment: The EA does not address whether the necessary fuel supply will be available for either the operating-life or the pay-back period of the RFHP. There is also no mention of the embedded energy costs of transporting the waste wood, such as how far away will it be coming from, will those distances increase over time, and what will the effects of higher truck fuel costs be.

> **Response:** The ESPC requires that the ESCO remain responsible for wood fuel supply for the entire term of the contract. The ESCO has identified a local provider for wood-waste fuel for the RFHP. The supplier has been in business for 32 years, is located less than 16 kilometers (10 miles) from NREL, has multiple local sources of wood-waste, and can guarantee the monthly and annual supply needed to meet the minor load of the RFHP.

Comment: The commenter expressed concern that there would be a significant increase in CO_2 emissions that would be realized over the use of natural gas. Regardless of the "net" CO_2 argument that the EA presents around wood versus natural gas, the fact remains that an increase is an increase.

> **Response:** There would be an increase in absolute quantity: 2,941 tons/year (natural gas) vs. 5,297 tons/year (4,544 wood and 753 natural gas). This increase of 2,356 tons represents an increase of less than 8 percent in the overall laboratory CO_2 footprint (30,067 tons, FY06). Further, as shown on Table 3-3, from a Maximum Predicted Impact to Health-Based Standards perspective, the RFHP emissions (8-hour average (micrograms/m^3) of 240,000 vs. the 9,000,000 health standard is not significant. NREL's policy on CO_2 is to be "carbon neutral." It is also appropriately NREL's policy to maximize the use of on-site renewable energy. To this end, the Renewable Fuel Heating Plant (RFHP) is expected to reduce laboratory natural gas (fossil fuel) use by a significant 75 percent at the South Table Mountain site. By accepted EPA national standards (EPA-AP42), the combustion of biomass (wood) waste at facilities such as the RFHP is considered to be CO_2 "net neutral." That is, the same amount of CO_2 is released during combustion of the biomass waste as was sequestered during its relatively recent growth cycle. The combustion of natural gas is considered to release "new" carbon into the atmosphere. Even though combustion of biomass waste is considered to be CO_2 "net neutral," NREL will purchase renewable energy credits (RECs) to offset all CO_2 produced by the RFHP.

Comment: The EA compares the RFHP CO_2 emissions with combustion of an equivalent mass of wood using a forest fire model. That comparison erroneously assumes that any wood waste not used at the RFHP will be subject to open burning with CO_2 emissions equal to or greater than the RFHP. Likewise, estimates of methane generated by landfilling or natural degradation assume a single, all-consuming end for the waste wood. A more accurate model is needed.

> **Response:** The comparative analyses provided in the EA were based on a technical review of the available literature. This review found "open burning" and "landfilling/natural degradation" as the best available and quantified alternatives for comparison to combustion. Other alternatives such as open decomposition could not be quantifiably compared based on the available scientific literature. The analyses were included to provide the reader and the decision-makers with additional means of comparing among alternatives but in no way assumed that these would be the only alternative pathways for wood waste not used by the RFHP.

Comment: It has come to my attention that the plan to build the RFHP was critical to a LEED [Leadership in Energy and Environmental Design] Platinum rating being awarded to the S&TF [Science and Technology Facility]. This commitment by the operating contractor may make construction of the RFHP a foregone conclusion, and any EA comments submitted by myself and others become moot.

> **Response:** The S&TF LEED Platinum rating was achieved in part through NREL's commitment to a renewable heating source for the building. In the event the RFHP is not constructed and operated, NREL could retain the platinum rating as long as an equivalent amount of renewable energy were installed on the building. For example, NREL could use PV to meet the requirement instead of heat generated through the RFHP. NREL's commitment to use of renewable energy through the LEED application process in no way represents a foregone commitment to the RFHP; other renewable heat sources could be considered through existing review mechanisms, including NEPA.